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Leukemia Ebb Is Rare News On the Environmental Front

A RARE example of good news on the environmental health front is the recent downturn in the rate of leukemia, whose statistics Drs. J. F. Fraumeni and R. W. Miller of the National Cancer Institute have been following for some years.

Between 1921 and 1964, the mortality rate in the United States increased from 20 to 80 per million population per year. Whatever environmental factor was responsible for this increase is associated with affluence; the rate among U.S. nonwhites is still around 20 and is correlated with economic status.

Leukemia is a name for a group of different diseases, all of them cancerlike proliferations of specific classes of white blood cells (leukocytes). For some time, it has been noted that leukemia follows a remarkable pattern in young children, the mortality rate rising to a peak at ages 4 to 5, then dropping again until it is caught up in the general increase of cancer incidence from middle age onward.

THE MOST plausible explanation of this childhood peak is that this form of leukemia is actually a congenital disease that begins in fetal life but has a latent period of four to five years before fulminating in lethal disease. This idea has some support in the observation that leukemia has a rather high risk of occurring in the second of a pair of one-egg twins if it has started in the first.

Leukemia (like some other congenital malforma-

tions) is also more likely to occur in children born to older mothers. However, the effect here might be confused with other environmental factors indirectly associated with that part of the population.

In his latest summary, in *Lancet* magazine, Dr. Miller notes that the downturn in leukemia mortality is specific to the childhood segment, under 5. Its magnitude is about a 15 per cent reduction during 1960-6 compared to 1950-9, or about 1000 fewer cases in the United States for that period.

With all of our efforts and concerns about finding cures for leukemia and cancers generally, it is obvious that we reap the greatest benefits from prevention. Any new drug that had "cured" 1000 cases of childhood leukemia would be announced with banner headlines.

Statistical analyses of this kind are fraught with potential errors of interpretation, for human populations are subject to many uncontrolled and invisible variables that do not appear in experimental laboratory work. It does appear, however, that exposure to some environmental variable was altered during that period.

ONE PLAUSIBLE candidate is radiation, particularly medical X-rays, whose potential hazards were well-advertised in the late '50s. There is good evidence that X-rays can induce leukemia; however, the expected yield

in postinfant stages is about two per million per rad of exposure, which is too small to relate to the trends since 1960.

Some conflicting evidence suggests, however, that the fetus may be 10 times or more as sensitive, and, if so, recent precautions about exposing pregnant women to unnecessary X-rays might account for much of the recent improvement. Also, physicians have become more sensitive to the special risks of the fetus and the newborn with respect to drugs and other chemicals—a point that reached mass attention with the thalidomide catastrophe of 1961.

Further studies on the prenatal experience of mothers whose children later succumb to leukemia are needed to isolate the specific factors whose elimination would be the most effective way to deal with this dread disease.

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